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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/645,182	08/21/2003	Toshikazu Hirota	791_069 CON	7053

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EXAMINER

DRODGE, JOSEPH W

ART UNIT

PAPER NUMBER

1723

DATE MAILED: 06/18/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>		<b>Applicant(s)</b>	
	10/645,182		HIROTA ET AL.0	
	<b>Examiner</b>		<b>Art Unit</b>	
	Joseph W. Drodge		1723	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 06 May 2004.
- 2a) ☐ This action is FINAL.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-13 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |   |   |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                        | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. _____  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                                    |

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The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-4,7,9 and 12 are rejected under 35 U.S.C. 102(b) as being anticipated by Swierkowski, of record.

Although claim 1 preamble language "for dispensing sequential, different sample solutions" is not accompanied specifically with a structural limitation, Swierkowski is generally drawn to dispensing of sequential samples (see especially Abstract and column 1, lines 35-41). Structurally disclosed are inlet ports (upper section of inlet ports 19), introduction holes 29 that lie at or below the plane of driving cavities 24-27, piezoelectric elements 39/44 "adjacent cavity walls that propel fluid by controlling the shape and volume of the cavities" (column 6, lines 22-29) with the cavities having the dimensions claimed (column 5, lines 33-60) and dimensioned to reduce tendencies of fluid to mix (column 3, lines 45-51).

Regarding dependent claims: for claim 2, see column 2, beginning at line 23 pertaining to cavity length; for claims 3 and 4, see discussion of plural ports, channels and cavities at column 4, line 65-column 5, line 19 thus forming plural units; for claim 9, see column 5, line 3 plural orifices inferring plural inlet ports; for claim 12 plate structure of metal is at column 4, lines 45-46 and for claim 4 fixing jigs are disclosed at column 8, lines 63-66 and column 9, lines 38-43).

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The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 5,6,8,10,11 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Swierkowski in view of Takeuchi et al patent 5,475,279 of record.

Firstly, it is noted that Swierkowski teaches modifying an ink jet print head to serve as a capillary dispenser for samples, while Takeuchi is an ink jet print head.

Claim 13 differs in requiring piezoelectric element being of a lead alloy and film. Such materials are taught by Takeuchi at column 6, lines 55-66 and column 7, lines 30-35. It would have been obvious to one of ordinary skill in the art to have utilized such materials of construction of Takeuchi in the device of Swierkowski to facilitate mass production techniques.

Claims 5 and 6 differ in requiring introduction hole, piezoelectric element and cavity to be in a portion joined to another portion containing the injection port and inlet port. Takeuchi teaches such construction in portions 44 and 42, with joining of the portions addressed at column 3, lines 60-65. It would have also been obvious to have utilized such construction of Takeuchi in the dispenser of Swierkowski, to allow bonding of different materials, hence improving product strength.

Claim 8 requires ports on opposed major surfaces of a flat plate. Takeuchi teaches such orientation of ports at column 4, lines 41-49 and in Figures. It would have also been obvious to have utilized the Takeuchi arrangement of ports with the Swierkowski dispenser, to enable placement of dispenser above receiving apparatus, i.e. facilitating adapting of the dispenser to crowded laboratory environments.

Claims 10 and 11 require the substrate to be of zirconia ceramic material. It would have also been obvious to have utilized such material, as taught at column 7, lines 52-56 of Takeuchi, in the Swierkowski dispenser, to increase mechanical strength and toughness in a substrate of small thickness.

Applicant's arguments filed May 6, 2004 have been fully considered but they are not persuasive.

It is argued that Swierkowski does not teach reactants being sequentially filled and then expelled from the cavity of the dispenser. It is submitted, that the claims being apparatus claims do not require any particular handling of reactants, only requiring construction so as to reduce mixing of sequential samples in the cavity. Such construction is inferred by column 1, lines 33-40 of the reference "dispensing of sample rapidly as well as precisely in location, size and time".

It is argued that there is piezoelectric elements are not taught as being on the wall or adjacent **each** cavity of Swierkowski. However, it is submitted that claim construction does not preclude there being additional flow path elements such as intermediate cavities so long as there is such a respective cavity for each respective combination of inlet port, introduction hole, and injection port.

It is argued that Swierkowski does not disclose the claimed cavity dimensions. It is submitted that these dimensions are indirectly disclosed or inherent from the disclosures of column 5, lines 11-12 and 61-67 of the cavities having a square configuration and optionally having a width of up to 200um (.2 mm).

It is argued that sample solutions are not introduced through inlet portion orifice 29 from the 'outside'. It is submitted that sample solutions are introduced through fill tubes 34 of Swierkowski to inlet portions 29, from outside of the substrate.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joseph Drodge at telephone number 571-272-1140. The examiner can normally be reached on Monday-Friday from 8:30 AM to 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wanda Walker, can be reached at 571-272-1151. The fax phone number for the examining group where this application is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either private PAIR or Public PAIR, and through Private PAIR only for unpublished applications. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have any questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JWD

June 15, 2004

*Joseph Drodge*  
**JOSEPH DRODGE**  
**PRIMARY EXAMINER**